



TENNESSEE DEPARTMENT OF

EDUCATION

FIRST TO THE TOP

Computer Programming II

Primary Career Cluster:	Information Technology
Consultant:	Bethany King Wilkes, (615) 532-2844, Bethany.Wilkes@tn.gov
Course Code(s):	3783/5907
Recommended Prerequisite(s):	Computer Programming I (3782/5906)
Credit:	1
Grade Level:	11-12
Aligned Student Organization(s):	Skills USA: www.tnskillsusa.com Brandon Hudson, (615) 532-2804, Brandon.Hudson@tn.gov Technology Student Association (TSA): www.tntsa.org Amanda Hodges, (615) 532-6270, Amanda.Hodges@tn.gov
Teacher Resources:	http://www.tn.gov/education/cte/InformationTechnology.shtml

Course Description

This course is designed to enhance skills developed in Computer Programming I in object-oriented programming language skills using high level languages such as *Java*, *C++*, and *BASIC*. The student will utilize the commands, statements, and procedures of this language to write, run, debug, and edit computer programs. This second-level course leads to Game Programming. *(This course requires a computerized workstation for each student with appropriate program development tools and compiler software.)*

Course Standards

Standard 1.0

The student will develop and apply concepts related to human relations, safety, career development, communications, and leadership skills for a global workplace.

The student will:

- 1.1 Demonstrate sensitivity to personal, societal, corporate, and governmental responsibility to community and global issues.
- 1.2 Demonstrate the interpersonal, teamwork, and leadership skills needed to function in diverse business settings, including the global marketplace.

- 1.3 Communicate effectively as writers, listeners, and speakers in diverse social and business settings.
- 1.4 Apply the critical-thinking and soft skills needed to function in students' multiple roles as citizens, consumers, workers, managers, business owners, and directors of their own futures.
- 1.5 Analyze and follow policies for managing legal and ethical issues in organizations and in a technology-based society.
- 1.6 Investigate the life-long learning skills that foster flexible career paths and confidence in adapting to a workplace that demands constant retooling.
- 1.7 Assess personal skills, abilities, aptitudes, and personal strengths and weaknesses as they relate to career exploration and apply knowledge gained from individual assessment to research and develop an individual career plan.
- 1.8 Examine the goals and principles of Future Business Leaders of America.
- 1.9 Investigate online and office safety procedures and pass a written safety examination with 100% accuracy.
- 1.10 Demonstrate parliamentary procedure through office staff/chapter organizational meetings.
- 1.11 Apply appropriate typography concepts to industry documents.

Sample Performance Task

- Design and produce a team project on legal and ethical issues that includes issues and penalties for plagiarism, copied text that does not require permission, and copied data that requires permission and the process used in obtaining permission. Obtain formal permission for use of quotations, art form, design, music, and photographs. Develop and present a total team project utilizing various technology components and appropriate typography concepts.

Standard 2.0

The student will demonstrate proficiency in the background knowledge of computers and programming.

The student will:

- 2.1 Discuss the history of computers and programming languages.
- 2.2 Discuss the components of the computer.
- 2.3 Summarize the distinguishable characteristics of the high level *Programming* languages such as **Java**, **C++**, and **BASIC**.
- 2.4 Critique the role of computer programming in society.

Sample Performance Task

- The student will develop a timeline for the history of computers and programming languages. Proficiency would be evaluated by the given dates and the content area covered on the timeline.



Standard 3.0

The students will use Program Development Tools as they relate to the programming development cycle. (CLE 3102.1.7, CLE 3102.2.1, CLE 3102.3.6, CLE 3102.3.1, CLE 3102.3.5, CLE 3102.3.6, CLE 3102.3.9, CLE 3103.1.7, CLE 3103.2.3, CLE 3108.1.7,)

The student will:

- 3.1 Develop a detailed logic plan using a flowchart.
- 3.2 Demonstrate the use of Pseudocode.
- 3.3 Apply the concepts and principles of object-oriented programming.

Sample Performance Task

- The student will produce a detailed logic plan using the programming development tools.

Standard 4.0

The student will write and document an executable program with high level languages such as *Java*, *C++*, and *BASIC* using best coding practices.

The student will:

- 4.1 Identify names for variables and their data types.
- 4.2 Recognize and apply the symbols for mathematical operations.
- 4.3 Demonstrate the various methods of obtaining input/output and formatting output.
- 4.4 Analyze the task and implement a detailed logic plan.
- 4.5 Demonstrate the use of control statements.
- 4.6 Identify, illustrate, and perform operations using arrays.
- 4.7 Identify and apply virtual functions and polymorphism.
- 4.8 Read and/or write data files for input/output purposes.
- 4.9 Debug the program and verify the output of the program.
- 4.10 Show proper documentation, formatting, and commenting of source code.
- 4.11 Design a program that makes extensive use of event driven, exception handling.
- 4.12 Create a program from an object-oriented design specification.

Sample Performance Task

- Each student will write a program that converts data from one unit of measurement to another unit of measurement. Evaluation will be the successful operation of the program.

Standard 5.0

The student will work as a team member to develop integrated application using high level languages such as *Java*, *C++*, and *BASIC*.

The student will:

- 5.1 Define the role of each team member.
- 5.2 Solve a complex task using high level languages such as *Java*, *C++*, and *BASIC*.
- 5.3 Compare and contrast the advantages of working as a group.



Sample Performance Task

- Each team will write a program to solve a complex task using high level languages such as **Java**, **C++**, and **BASIC**. The problem to be solved by each team will be determined by the team members. Evaluation will be the successful operation of the program.

